

Ethnomedicinal Plants Used by Gond Tribe of Bhandara District, Maharashtra in the Treatment of Diarrhoea and Dysentery

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Issued July 01, 2009

Abstract

This research paper presents the findings of an investigation on traditional remedies of diarrhoea and dysentery among the ethnic group (*Gond* tribe) in the Bhandara district of Maharashtra state, India. 38 valuable species belonging to 27 families were identified with relevant information and are documented alphabetically in this paper with regard to their botanical name followed by family name, local name, parts used, mode of preparation and medicinal uses.

Keywords: New Bioresources; Diarrhoea; Dysentery; *Gond* tribe; Bhandara district; Maharashtra, India.

Introduction

Since the pre-historic society man has been in way to search the cures and relief from physical and mental illness by using numerous plants and plant derived products. Biodiversity is the basis of human survival and economic well being (Singh *et al.*, 1994) and constitutes the resources upon which families, communities and future generations depend (Dowdeswell, 1995). India is extremely rich in medicinal plant diversity distributed in different geographical and environmental conditions and associated tribal and folk knowledge systems. India has the second largest tribal population in the world after Africa (Kshirsagar & Singh, 2000).

In India it can be traced back to the 'vedic' period (5000-1500BC). The identity of some plants like *Bombex ceiba* Linn. and *Ficus religiosa* Linn. reffered in the 'Rig-Veda', can be fixed with reasonable certainty. The '*Atharveda*' contains detailed information on approximately 2000 medicinal plants and their uses. After the '*Vedic era*' the works of 'Charak' and 'Sushruta' namely '*Charak Samhita*' and '*Sushruta Samhita*' deal with 700 drugs of daily and specific uses (Mukherjee *et al.*, 2006). The World Health Organisation (WHO) estimates that about 80% of the population living in the developing countries relies on traditional medicines for primary health care needs. The Indian Materia Medica includes about 2000 drugs of natural origin, almost all of which are derived from different traditional systems and folklore practices. (Narayana *et al.*, 1998).

This plant based traditional knowledge has become a recognised tool in search for new sources of drugs and nutraceuticals (Sharma & Mujumdar, 2003). Some work on medicinal plants in relation to their utilization and conservation has been conducted in many parts of India (Padhye *et al.*, 1992; Bhogaonkar & Devarkar, 2002; Chaudhari & Hutke, 2002 and Khumbangmayum *et al.*, 2005).

Diarrhoea is a major public health problem in developing countries and is said to be endemic in many regions of Asia and is the leading cause of high degree of morbidity and mortality which contributes to the death of 3.3 to 6 million children annually. Multiple drug resistance among Enteropathogens in various geographic regions presents a major threat in the control of diarrhoea. Therefore indigenous medicinal plants as an alternative to antibiotic are said to play a significant role here. This particular aspect of using medicinal plants as a remedy or home cure for diarrhoea is applied in our study.

In the present study, we chose some plants currently used in the folk medicine in our region, small rural place in Bhandara, a rich fauna and a good source of medicinal plants. All of these plants selected for the study have been used as traditional folklore medicine for the treatment of dysentery and diarrhoeal diseases in this region.

Bhandara, the district of lakes and also called as the ‘rice bowl of Maharashtra’ is situated in the Nagpur division (21.09 N latitude and 79.42 E longitude). It is surrounded by Balaghat district (Madhya Pradesh) in the North, Gondia in the East, Chandrapur in the South, and Nagpur in the West and is shown in Fig. 1. The area is flat or undulating, broken by the isolated hillocks and ranges of low hills. The district is covered by Ambagad hills, Ballahi range and Pauni ranges. The forest is tropical dry deciduous type and consists of sub-types, teak forest and mixed forests. *Gond* people are quite aware of the uses of plant species having ethnobotanical values. So far no work has been reported on ethnobotanical uses of plant species found in Bhandara and the current deforestation trends, which threaten the existence of medicinally important plants, makes it inevitable that this information be made available and encourage preservation of their culture, traditional knowledge, conservation and sustainable utilization of the plant wealth occurring in the study area. The present paper specially deals with so and dysentery by the *Gond* tribe of Bhand

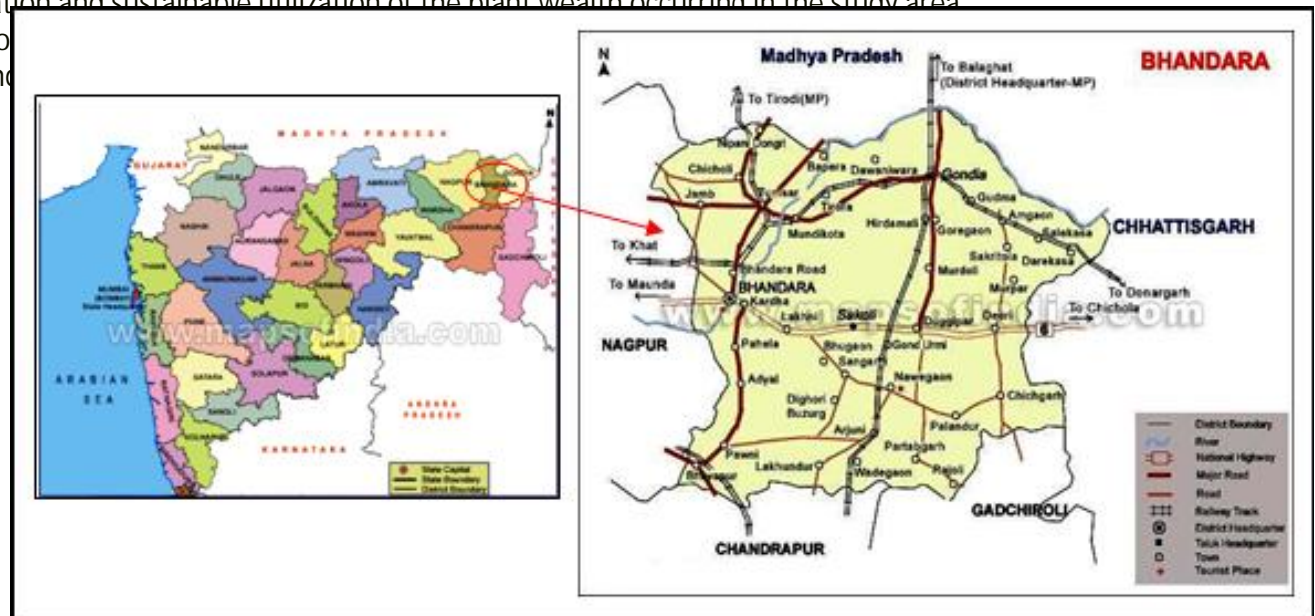


Fig. 1: Location map of study Area. (Source: www.mapsofindia.com)

Methodology

Information on the use of medicinal plants was collected during January 2007 to January 2008 through field surveys in different remote villages of the Bhandara district. The questionnaires were devised to identify the indigenous knowledge of plant-based remedies from local people. Information was gathered through semi-structured interviews that were held with selected knowledgeable elders. At the end of each interview, the plant specimens were collected, dried by using routine botanical collection and herbarium techniques, identified and preserved (Jain & Rao 1997). Samples of recorded herbs, shrubs and trees were identified with the help of local floras and previous works (Theodore Cooke, 1967; Jain, 1991 and Naik, 1998). Plant based remedies have presented with botanical name of species followed by family, local name, parts used, mode of preparation and ethno medical uses. A total of 15 traditional medicine practitioners between the ages of (32-70 yrs), were chosen with the assistance of local administrators and community leaders served as key informants.

Results

The investigations revealed the medicinal plants used in diarrhoea consist of 38 species of 35 genera belonging to 27 families. Rutaceae is the dominant family (4 spp.), followed by Mimosaceae (3) Moraceae (2) Euphorbiaceae (2) Rhamnaceae (2) Combretaceae (2) Asteraceae (2) Liliaceae (2) and others having one each. The species were used either alone or in combination with other native species.

Ethanol and aqueous extracts of different parts of the commonly available plants of the Bhandara region were evaluated for antidiarrhoeal and antidiarrhoeal activity against the enteric pathogens. In the preparation of drug, leaves are mostly used which is accounting for 26% followed by fruits (21%), roots (18%), stem (13%) seeds (11%) and whole plant (8%). Other parts such as latex, tuber, gum bud and flower, used occasionally are account for 03%. A majority of remedies are prepared in the form of juice followed by powder and paste form, from freshly collected plant parts.

A single plant part or a combination of several plant parts usually makes the preparations. Sometimes combination of two or more different plant species are also used. In some treatments, animal product is used along with the plant material. Medical administration includes mostly oral administration. Based on ethno-medico-botanical information, the plant species used in the treatment of diarrhoea and dysentery, have been arranged alphabetically along with botanical name, family, local name, parts used and mode of preparation and uses in Table 1.

Table 1: Ethnomedicinal plants used by Gond tribe of Bhandara in the treatment of diarrhoea and dysentery

S. N.	Botanical Name	Family	Local Name	Parts Used	Mode of preparation and uses
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1.	<i>Acacia leucophloea</i> (Roxb.) Willd.	Mimosaceae	Hiwar	Roots	Roots are tide on waist and legs to cure diarrhoea in children for 7 days.
2.	<i>Acacia nilotica</i> (L.) Del.	Mimosaceae	Babhul	Roots, Leaves, Seeds	A root extract was used in the treatment of diarrhoea and dysentery. Leaf macerated with rice water, taken orally about 50 ml each time, twice daily for 3 to 5 days in diarrhoea. Seeds enclosed in fruits are used as astringent and in diarrhoea and dysentery.
3.	<i>Achyranthes aspera</i> L.	Amaranthaceae	Aaghada	Leaves	Leaf paste with jaggery and butter/curd taken twice a day to cure blood dysentery.
4.	<i>Aegle marmelos</i> (L.) Corr.	Rutaceae	Bel	Fruits	Fruit pulp is given internally to cure diarrhoea for 3-5 days.
5.	<i>Ailanthus excelsa</i> Roxb.	Simaroubaceae	Maharukh	Bark	Bark ground to paste and administered orally along with curd, twice a day in dysentery.
6.	<i>Allium cepa</i> L.	Liliaceae	Kanda	Bulb	The bulb is cut vertically, and a little amount of lime (Calcium hydroxide) is inserted through the slit and allowed to remain for 10 minutes. Then it is directly chewed to check blood dysentery.
7.	<i>Andrographis paniculata</i> (Burm. f.) Wall ex Nees.	Acanthaceae	Bhuineem	Whole Plant	Decoction of dried plant is given to cure diarrhoea.
8.	<i>Asparagus racemosus</i> Willd.	Liliaceae	Shatawari	Root tuber	Boiled milk extract of fresh roots (tubers) taken orally to cure blood dysentery.
9.	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Kadu Neem	Gum	2-3 grams of the gum secreted from the stem bark dissolved in rice water and administered twice a day to check diarrhoea in childrens.
10.	<i>Butea monosperma</i> (Lamk.) Taub.	Fabaceae	Palas	Leaves	Crude leaf extract used internally twice a day to cure diarrhoea.
11.	<i>Cannabis sativa</i> L.	Cannabaceae	Bhang	Leaves	About 2 g of leaves are taken thrice a day to cure diarrhoea.

12.	<i>Cassia tora</i> L.	Caesalpiaceae	Tarota	Seeds	Ground the seeds of <i>Cassia tora</i> (Tarota) with inflorescence & leaves of <i>Sphaeranthus indicus</i> (Gorakhmundi), seeds & roots of <i>Abelmoschus ficulneus</i> (Jangli bhendi). One spoon powder is mixed with one cup of water and a small piece of jaggery, the mixture is given thrice a day in empty stomach to cure indigestion.
13.	<i>Citrus medica</i> L.	Rutaceae	Idilimbu	Fruits	Unripe fruit paste taken orally with a little sugar or sugar candy once a day for three days in diarrhoea.
14.	<i>Datura metel</i> L.	Solanaceae	Kala dhotra	Seeds	Seeds are purified by soaking in cow urine for 12 hours. Then the seed coats are removed and cotyledons are boiled in cow milk and made to paste. The product is taken internally to cure chronic or persistent diarrhoea and dysentery.
15.	<i>Diospyros melanoxylon</i> Roxb.	Ebenaceae	Tendu	Leaves	Tender leaf juice taken orally to cure diarrhoea.
16.	<i>Erythrina variegata</i> L.	Fabaceae	Pangara	Bark	Decoction from bark administered orally to cure blood dysentery.
17.	<i>Feronia limonia</i> (L.) Swingle	Rutaceae	Kawath	Fruit	Unripe fruit paste taken orally twice a day for three days to check diarrhoea.
18.	<i>Ficus benghalensis</i> L.	Moraceae	Wad	Aerial root	Extracted Juice from aerial roots (Prop root) taken in empty stomach twice a day to cure dysentery in children.
19.	<i>Ficus hispida</i> L.f.	Moraceae	Khartembhur/ Bhuiumber	Latex	Latex collected from cut wounds of the stem taken orally to cure blood dysentery and diarrhoea.
20.	<i>Gmelina arborea</i> Roxb.	Verbenaceae	Shivan	Fruits	Ripened fruit juice with sugar and pomegranate fruit juice taken orally to cure dysentery.
21.	<i>Hemidesmus indicus</i> (L.) R. Br.	Asclepiadaceae	Anantmool	Root tuber	Root tubers grounded with fennel (<i>Foeniculum vulgare</i>) and the paste taken with jaggery twice a day for three days to check diarrhoea and dysentery.

22.	<i>Jatropha curcas</i> L.	Euphorbiaceae	Mogli Erand	Latex	Latex from the stem and leaf taken orally along with ripe banana once or twice a day to check dysentery in adults.
23.	<i>Lawsonia inermis</i> L.	Lythraceae	Mendi	Roots	Ground the roots with neem and ginger leaves and paste is given with boil water to check diarrhoea in babies.
24.	<i>Mangifera indica</i> L.	Anacardiaceae	Aamba	Bark	Ground bark with a little lime, is used to cure dysentery.
25.	<i>Mimosa pudica</i> L.	Mimosaceae	Lajurli	Root	Roots pounded with water and the liquid paste taken twice a day in diarrhoea.
26.	<i>Momordica charantia</i> L.	Cucurbitaceae	Karale	Unripe fruits	A decoction of fruit in a litre of water is drunk as tea until the symptoms disappear.
27.	<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Kadi nimb	Leaves	Decoction of the leaf taken orally to cure dysentery.
28.	<i>Musa paradisiaca</i> L.	Musaceae	Keli	Leaves	Sap from the leaf, administered orally to cure diarrhoea.
29.	<i>Oxalis corniculata</i> L.	Oxalidaceae	Aamti	Leaves	Leaf juice (50ml) taken twice a day for three days to get relief from chronic dysentery and diarrhoea.
30.	<i>Punica granatum</i> L.	Punicaceae	Dalimb	Leaves, Fruit & Bud	Leaf, bud or unripe fruit is made to paste along with rice washed water and administered orally along with a minute pinch of opium. Half cup taken twice a day to check diarrhoea.
31.	<i>Sphaeranthus indicus</i> L.	Asteraceae	Gorakhmundi	Whole plant	Children suffering from dysentery are exposed to fumes of whole plant.
32.	<i>Sterculia urens</i> Roxb.	Sterculiaceae	Kago/kullu	Gum	Gum soaked in water mixed with cow's milk (1/2 cup) and sugar (1 teaspoon) and given for dysentery, 1 glass only twice.
33.	<i>Tamarindus indica</i> L.	Caesalpiniaceae	Chinch	Leaves & Flower	Tender leaves macerated to paste and taken directly to check dysentery. Also powder made from dried flowers taken orally with sugar in blood dysentery.
34.	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Behada	Fruits	Powder prepared by burning the fruits, taken internally with rock salt in diarrhoea.

35.	<i>Terminalia chebula</i> Retz.	Combretaceae	Hirda	Seeds	One teaspoonful of seed powder is given with hot water thrice a day to cure diarrhoea. Paste prepared from pericarp taken along with the curd to cure diarrhoea.
36.	<i>Tridax procumbens</i> L.	Asteraceae	Kamber modi	Whole plant	Whole plant made in to paste and taken orally in diarrhoea.
37.	<i>Ventilago denticulata</i> Willd.	Rhamnaceae	Raktapiti/Ragatpiti	Bark	Fresh bark crushed with flour of <i>Cicer arietinum</i> (Gram) with little water to extract juice and a cup of it, is taken twice a day for 8 days to get relief from loose motions.
38.	<i>Ziziphus mauritiana</i> Lamk.	Rhamnaceae	Bor	Fruit	Fruit pulp along with curd, pomegranate juice and sesamum oil is taken orally to cure blood dysentery.

Discussion and Conclusion

The present study reveals that the local medicine men of the study area have good knowledge of the medicinal property of a variety of plant species that grow around their locality. The traditional knowledge available with the ethnic people plays an important role in quick and proper identification of natural resources. The traditional knowledge systems of the folk, oral tradition, and also published and unpublished literature are the important sources of locating potential bio resources. Unfortunately, due to the lack of written documents, most of the traditional knowledge about medicinal plants and their uses survived only by words of mouth from generation to generation and are being gradually lost.

The most extensively used plant part in the preparation of medicine for various ailments is the leaf, followed by fruits. Though the collection of leaves is higher it does not pose a great danger to the existence of an individual plant as compared to collection of other plant parts especially underground plant parts (viz. roots, bulb, tuber), stem and whole plant. The destructive harvest is of grave consequences from both ecological as well as survival point of view of the species (Dawit & Ahadu, 1993).

The present study revealed that traditional medicinal plants still play a vital role in primary healthcare need of *Gonds* in Bhandara district and the knowledge received from them will be very useful for researchers in ethnobotany and pharmacology. The observations from the present study need to be validated with pharmaco-chemical studies in order to confirm their effectiveness.

Acknowledgement

The authors express thanks to the herbal doctors in the study area for revealing their traditional medico-botanical knowledge and for their permission to communicate their knowledge to a wider audience for the benefit of every one. Thanks are also expressed to Director NEERI, Nagpur for providing financial assistance and co-operation extended during study.

References

- Bhogaonkar, P. Y. & Devarkar, V. D., 2002. Some unique ethnomedicinal plants of Korkus of Melghat Tiger Reserve (Maharashtra). *Ethnobotany*. **14**: 16–19.
- Chaudhari, U. S. & Hutke, V., 2002. Ethno-medico-botanical information on some plants used by Melghat tribes of Amravati District, Maharashtra. *Ethnobotany*. **14**: 100–102.
- Dawit A & Ahadu A, 1993. *Medicinal plants and enigmatic health practices of northern Ethiopia*, (B: S: P: E., Addis Ababa, Ethiopia).
- Dowdeswell Elizabeth, 1995. *Global Biodiversity Assessment*, (UNEP, CUP, UK).
- Jain, S. K., 1991. *Dictionary of Indian Folk Medicine and Ethnobotany*. Deep publications, New Delhi.
- Jain, S. K. & Rao, R. R., 1977. *A handbook of field and herbarium methods*; Today and Tomorrows Printers and Publishers, New Delhi.
- Khumbangmayum, A. D., Khan, M. L. & Tripathi, R. S., 2005. Ethnomedicinal plants in the sacred groves of Manipur. *Indian Journal of Traditional Knowledge*. **4** (1): 21-32.
- Kshirsagar, R. D. & Singh, N. P., 2000. Less-known ethnomedicinal uses of plants in Coorg District of Karnataka state, Southern India. *Ethnobotany*. **12**: 12-16.
- Mukherjee, P. K., Wahile, Atul., 2006. Integrated approaches towards drug development from Ayurveda and other Indian system of medicines. *Journal of Ethnopharmacology* 103, 25-35.
- Naik, V. N., 1998. *Flora of Marathwada*, Vol.1 and 2, Amrut Prakashan, Aurangabad.
- Narayana, D.B.A., Katayar, C. K., Brindavanam, N. B., 1998. Original system: search, research or re-search. *IDMA Bulletin* 29, 413-416.
- Padhye, M. D., Deshmukh, V. K. & Tiwari, V. J., 1992. Ethnobotanical study of Korku tribe of Amravati District, Maharashtra State, India. *International Journal of Pharmacognosy*. **30**: 17–20.
- Sharma, P. P. & Mujumdar, A. M., 2003. Traditional knowledge on plants from Toranmal Plateau of Maharashtra. *Indian Journal of Traditional Knowledge*. **2**: 292–296.

Singh, J. S., Raghubanshi, A. S. & Varshney, C. K., 1994. Integrated biodiversity research in India. *Curr Sci.* **66** (70): 109.

Theodore, Cooke. CIE. 1967. *The flora of the Presidency of Bombay*, Vol. 1 and 2, Botanical Survey of India, Calcutta.